The Bay Institute of San Francisco

"Restoring the Bay's ecosystem ... from the Sierra to the sea."

April 4, 2000

TO: CALFED Management Team

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RE: Stage 1 Water Management Strategy/Environmental Water Account

CALFED's Stage 1 Water Management Strategy (WMS), which includes a proposed Environmental Water Account (EWA), is intended to develop a coordinated approach for operating the Central Valley Project (CVP) and State Water Project (SWP) in combination with new "assets" (e.g., increased export and storage capacity, operational flexibility) in order to make progress toward restoring the Bay-Delta ecosystem by reducing current federal and state water project impacts on fish species of concern, improve water supply and reliability, and improve water quality.

The Bay Institute (TBI) has been involved from the beginning in the process of developing the Stage 1 WMS and supports the concept of using an EWA as a central tool for achieving water management benefits. However, there are a number of important technical and policy issues that must be resolved before either the EWA or other Stage 1 assets can be considered acceptable solutions to existing water management problems. These issues can be summarized as follows:

- Is the scale of critical-period export reductions under evaluation adequate to protect fish species of concern?
- Do increased export operations at other times of the year place other fish species and/or ecosystem values at risk?
- Is the Stage 1 WMS underutilizing other tools (such as flow augmentation and demand management) for achieving fish protection and water quality objectives?

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1. Export Reductions

Reductions in water export rates at state and federal facilities are intended to reduce fish salvage rates. Export reductions are timed to coincide with seasonal (or "real-time") presence of sensitive species (delta smelt, chinook salmon, splittail, steelhead) and/or life history stages. In recent modeling exercises (conducted by the Water Management Coordination Team, WMCT), exports during winter and spring (January-May) were reduced while exports were increased during the summer and fall (June-October).

There is no question that reducing exports during the January-May period will provide benefits for fish species of concern and we support such reductions as a critical Stage 1 action. Modeling exercises estimate salvage reductions (compared to a Water Quality Control Plan baseline) that range from 0-50% depending on species, water year type and modeling assumptions. Should CALFED rely primarily on reducing exports to control Delta hydrologic conditions for fish? Because these model predictions have not been empirically tested nor have the relationships between salvage rates, export rates, and in-Delta hydrologic conditions (e.g., Delta inflow, Delta outflow, and Qwest) been quantified or incorporated into the models, it is unclear whether the proposed Stage 1 export reductions for minimizing fish take would be more effective in providing fish protection than alternative (and/or complementary) strategies, such as modifying other in-Delta hydrologic parameters (e.g., CALFED Ecosystem Restoration Program Plan, ERPP, programmatic actions for Delta inflow and outflow, see below). Absent these types of analyses, it is not possible to assess whether the increment of fish protection provided by the proposed reductions is adequate to address regulatory concerns or to serve as the basis for assurances regarding permitting and future ESA requirements, or to evaluate the relative value of export reductions against other strategies for providing fish protections.

2. Export Increases in Summer/Fall

The recent modeling exercises assume that winter/spring export reductions will be made up by summer/fall export increases. This strategy raises a number of issues. The shift in export timing results in an increased reliance on the export of controlled flows and a corresponding change in the upstream and in-Delta hydrographs. In order to support summer/fall exports, reservoir releases and upstream flows during the winter and spring are reduced to hold back water for later export, and increased during the summer/fall to provide export water. This strategy is contrary to proposed ERPP programmatic actions of enhanced late winter/spring flows for the Delta and its tributary rivers that are intended to improve fish habitat (e.g., temperature, attraction and transport flows) and ecosystem functions that support fish populations (e.g., food webs). Impacts of these environmental changes on upstream and in-Delta fishes and ecosystems should be evaluated. The in-Delta consequences of high export rates in the summer/fall (including exports >65% of inflow, as modeled in some cases) could also be substantial and have been demonstrated by results of such operations in past years (e.g., high salvage rates of juvenile delta smelt, splittail and striped bass in July and August of many years). The effects of high Delta inflow combined with low Delta

outflow on Delta hydrology and ecosystem function during this critical summer rearing period are unknown. All of these potential results of this seasonal shift in flow and exports need to be examined and quantified to determine whether their impacts negate or exceed any improvements in fish protection effected by reducing take earlier in the year.

3. Delta Outflow

The recent modeling exercises rely on upstream flow releases and export reductions to achieve fish protections. Neither CALFED's objectives for enhancing Delta outflow nor potential adverse impacts of Stage 1 operations on outflow are addressed.

In nearly all cases, increases in upstream flow to protect upstream fish and habitat are subsequently exported by the CVP and SWP, thus providing little benefit to Delta or San Francisco Bay habitats. Yet, for many Delta species, abundance is positively correlated with Delta outflow. Recognizing this, CALFED's ERPP has identified enhanced Delta inflow and outflow (as water year type-dependent target flow levels and pulse flows) as programmatic actions to improve both fish abundance and ecosystem functions that support fish populations. However, ongoing modeling exercises, even in simulations (i.e., "games") intended to implement all actions deemed necessary to protect fish, have not attempted to implement in whole or in part these ERPP flow actions (e.g., Game 3A, 1985, dry year March outflow targets) but rather have continued to export at levels to maximally satisfy full demands. Far from increasing Delta outflow at critical periods, the Stage 1 WMS could actually decrease Delta outflow in many dry years. For instance, comparing results of current modeling exercises to historic values, outflow was reduced by up to 1 million acre-feet (MAF) in 1985 and by 50 percent during December 1993 and January 1994, even in "games" intended to fully satisfy fish protection objectives. This is a far cry from "skimming" peak flow events as originally envisioned by CALFED. To be consistent with CALFED's ERPP, enhanced upstream flows (coupled with reduced exports as necessary) that result in increased Delta outflow should be considered as a WMS action with beneficial impacts on fishes and habitat. Therefore, in order to ensure sufficient progress toward achieving the ERPP Delta objectives, achieve maximum efficiency between upstream and in-Delta actions, and secure synergistic environmental benefits, Stage 1 assets including the EWA should be managed to achieve both ERPP flow targets and reductions in fish take. This underscores the need for combining control of upstream, Delta and service area environmental assets under one ecosystem manager. It also points to the need to evaluate the Stage 1 WMS on the basis of improved ecosystem function and habitat quality, not solely on the basis of reduced take.

4. Additional Problems and Concerns

Except during multi-year droughts, WMS and EWA modeling exercises consistently export greater amounts of water than either historic or predicted demands. For instance, the California Urban Water Agencies, in a 1999 report, identified a total annual demand level of ~5.5 MAF, yet in nearly all non-drought years, EWA models routinely exported substantially greater amounts (e.g., Game 3A, 1983, 6.2 MAF). A more accurate correspondence between export operations and water demand would

increase operational flexibility, particularly during non-drought years, enhance the ability to provide new environmental protections, and avoid adverse impacts from unnecessarily shifting export operations. Furthermore, additional water supplies (or demand reductions) gained from water use efficiency and water conservation savings are not adequately included in WMS planning or analyses. The WMS exercises therefore overestimate water demand and the corresponding export operations to meet this demand.